CEMENT MILL SECTION of

Concrete

The Cement Mill Edition of Concrete is edited exclusively for those interested in the manufacture of portland cement. Its pages are devoted to discussions of plant design, management, operation, production efficiency, chemical research and control, quarry operation, progress and news of the industry.

The Cement Mill Edition also contains all the material published in the corresponding Regular Edition and so provides news of the uses and merchandising of the materials whose manufacture is discussed in the Mill Edition. The Regular Section furnishes mill operating officials and mill executives valuable points of contact with the users of the materials they produce.

Volume 41 July, 1933 Number 7

CONTENTS

Landa Portland Takes New Departure in Cement Industry *(Illus.)* 27

First detailed announcement of a process comprising the production of several different types of cements.

Congressional Address Defends Price of Portland Cement 31

Hon. Francis E. Walter, in speech, points to continuous badgering of government and to uniform prices of other commodities.

Editorial 33

There Is No All-Purpose Cement.

Badgering of Cement Industry Continues.

Cement Statistics for May *(Illus.)* 34

Mill Equipment *(Illus.)* 36

Field Activities 36

Industrial Literature 36

Copyright, 1933, by Concrete Publishing Co.

INDEX TO ADVERTISEMENTS

Allis-Chalmers Mfg. Co. 26

Engineering & Designing 23

Link-Belt Co. 35

Allis-Chalmers Compeb mill with air separation in a plant of Missouri Portland Cement Co.

MODERN cement making machinery has developed so rapidly during the last few years that equipment installed as late as five or six years ago is to a large extent obsolete. The installation of new grinding machinery and other allied equipment will not only greatly lower the cost of production but also produce an improved quality of cement. The rehabilitation of existing plants would help the Cement Industry as a whole.

An outstanding example of reduced operating costs resulting directly from the installation of modern grinding machinery, may be found in the plant of the Missouri Portland Cement Company, St. Louis, which has been cited by the Robertson Committee for Industrial Rehabilitation as having effected a profit-paying plant modernization. Large modern grinding units have replaced obsolete mills. As a result production capacity has been materially increased, quality has been improved, and cost per barrel reduced more than twenty-six cents.

ALLIS-CHALMERS

Allis-Chalmers Manufacturing Company, Milwaukee

Vol. XLI
No. 7

Cement Mill Section of
Concrete

JULY
1933

Landa Portland Takes New Departure in Cement Industry

Portland Cement and Lime Industries May Work Hand in Hand in Improving Manufacture and in Use of Principal Materials of Construction Through New Process with Little Variation in Procedure. It Permits the Production of High-Strength, Ordinary, Masonry and Plastering Cements

UNDER the heading "The Competition of the Thirties," an editorial appearing on page 39 of the July (1932) issue of the Cement Mill Edition of CONCRETE, had the following to say, in part:

"The feeling is that the staid old cement industry must develop some 'crazy' merchandising ideas, or it will be sunk. It is felt also that so-called standard portland cement will be only a memory, and that cement manufacturing companies will be trying to outstrip each other with new products and better merchandising methods. * * * The coming competition will be a competition of products as well as of service. * * * The products and by-products to be developed may leave some of the old-line cement manufacturers breathless."

Further in this vein, and stressing the need of various kinds of cements for various uses, P. H. Bates, in a paper[1] read before the A. S. T. M. on June 30, 1933, is quoted in part as follows:

"Today portland cement is employed in a variety of uses and conditions of service. * * * Today, also, many engineers have learned enough about cement, especially of certain physical characteristics, to know that any one type of hydraulic cement will not fulfill all the demands which the great variety of service conditions present. * * * To be most effective in highway construction, it is not necessary that the heat of hydration be particularly low or that marked plasticity be present, or that the cement should be especially resistant to aggressive waters. For such use, good strength is desirable and the earlier this is obtained the better, but the cement should also be resistant to changes produced by both heat and moisture. In reinforced concrete building construction, the earlier and the higher the strength the better. The setting of masonry demands above all else a cement which will produce a very plastic mortar, but the mortar must have volume constancy both before and after hardening. Mass concrete demands a cement of low heat of hardening, seldom any very marked high strength and generally a good resistance to atmospheric changes.

* * * "Since it seems impossible to have more than one or two of these properties developed to any major

Landa Portland Cement Company plant at Puebla, Mexico

[1]1933 Preprint No. 43, A. S. T. M.

MILL TEST NO. 60

Caustic lime in size 2 in. and down, and diatomaceous earth in its moist, lump form, were fed by poidometer belt to feed end of compeb mill where a gauged amount of water was added to insure hydration and the proper reactions between the lime and the siliceous material. Moisture, temperature and fineness factors were controlled during test period, which approximated 8 hours. At the latter stage of the test portland cement clinker previously ground to No. 4 mesh and down was fed to the mill in varying proportions along with the previously mentioned lime/diatomite/water feed.

Percentage of Cement in Product	*Finished Products as Discharged from Mill* 60-A 0.0%	60-B 7.0%	60-C 42.0%
Chemical Analyses—			
SiO_2	27.24%	26.40%	23.60%
R_2O_3	3.44	4.20	6.40
CaO	50.28	51.16	57.97
SO_3	trace	.17	1.02
Ign. Loss	17.30	17.25	8.04
Physical Tests—			
Normal Const.	55%	53%	36%
Initial Set	6:20	4:12	0:15
Final Set	15:57	10:26	1:00
Specific Grav.	2.25	2.27	2.60
Fineness, No.—			
200-Mesh	99.4	99.6	98.5
325-Mesh	96.0	97.3	96.5
Tensile Strength 1:3 Sand, Lb. per Sq. In., at Age—			
24 Hours	46	61	326
3 Days	60	108	376
7 Days	111	261	449
28 Days	337	475	527

MILL TEST NO. 77

Caustic lime fed to hammermill and discharged ¼ in. and down, and tripoli in its moist state discharged into common elevator and mixture in turn discharged into screw-type hydrator at which point correct amount of water for hydrating and reaction purposes was added. Hydrator in turn discharged material into feed screw of tube mill, which operated for period approximating 10 hours. At latter stage of test preliminary ground cement clinker was fed to mill in varying amounts with the above mentioned caustic lime/tripoli/water feed. Temperature, moisture and fineness control exercised.

Pct. of Cement in Product	*Finished Products as Discharged from Mill* 77-A 0.0%	77-B 5.0%	77-C 10.2%	77-D 17.2%	77-E 41.4%	77-F 70.7%
Chemical Analyses—						
SiO_2	24.00%	22.04%	21.00%	19.10%	22.80%	20.80%
R_2O_3	7.00	5.80	6.70	6.42	6.64	8.44
CaO	52.09	55.90	56.91	58.86	59.22	62.01
SO_3	.03	.17	.24	.37	.68	1.09
Ign. Loss	16.20	15.60	15.14	14.20	12.90	7.10
Phys. Tests—						
Nor. Const.	35%	36%	36%	38%	35%	37%
Initial Set	3:55	2:05	2:12	2:45	2:30	2:05
Final Set	10:55	9:35	9:52	5:15	6:45	3:45
Specific Gr.	2.27	2.30	2.36	2.51	2.62	2.73
Finen's, No.						
200-Mesh	100	100	100	100	100	100
325-Mesh	99.0	99.5	98.5	99.0	99.0	97.0
Ten. Strength 1:3 Sand, Lb. per Sq. In., at Age—						
24 Hours	26	39	33	103	110	275
3 Days	34	41	43	176	180	398
7 Days	47	65	52	237	242	434
28 Days	302	414	454	506	511	659
3 Months	427	443	497	529	545	661

MILL TEST NO. 84

Caustic lime passed through hammermill and moist quarry clay in its moist state discharged into common elevator, which in turn discharged into screw-type hydrator, at which point the necessary water was added to complete hydration and promote desired reactions. Hydrator in turn discharged into feed screw of tube mill, test period covering 8 hours. At latter stage of test preliminary ground cement clinker was fed to mill in varying proportions along with above mentioned caustic lime/quarry clay/water feed. Moisture, temperature and fineness control exercised throughout test.

Percentage of Cement in Product	*Finished Products as Discharged from Mill* 84-A 0.0%	84-B 42.7%	84-C 55.8%	84-D 76.4%
Chemical Analyses—				
SiO_2	18.02%	19.20%	20.60%	23.40%
R_2O_3	8.18	9.00	8.20	9.02
CaO	58.18	60.60	61.90	62.15
SO_3	.38	1.26	1.54	1.95
Ign. Loss	15.18	8.20	4.90	2.50
Physical Tests—				
Normal Const.	44%	35%	27%	23%
Initial Set	3:05	2:25	1:40	2:00
Final Set	11:55	5:38	5:10	4:30
Specific Gr.	2.41	2.68	2.74	2.86
Fineness, No.—				
200-Mesh	99.5	99.0	98.0	98.0
325-Mesh	96.4	93.0	87.0	88.1
Tensile Strength 1:3 Sand, Lb. per Sq. In., at Age—				
24 Hours	28	204	246	328
3 Days	37	281	259	396
7 Days	66	361	305	451
28 Days	123	507	438	519
3 Months	252	553	535	597

MILL TEST NO. 85

Caustic lime passed through hammermill and a mixture of diatomaceous earth, tripoli and quarry clay discharged into the common elevator, which in turn discharged into a screw-type hydrator, at which point sufficient water for hydration and to promote reactions was added. Hydrator discharged into feed screw of tube mill, test approximating 8 hours. Moisture, temperature and fineness control exercised throughout test. Preliminary ground cement clinker fed to mill in varying proportions at latter stage of test along with above mentioned caustic lime/diatomite/tripoli/quarry clay/water feed.

Percentage of Cement in Product	*Finished Products as Discharged from Mill* 85-A	85-B	85-C	85-D	85-E
Chemical Analyses—	0.0%	22.2%	36.7%	56.0%	90.8%
SiO_2	20.42%	20.20%	20.24%	21.60%	21.40%
R_2O_3	8.60	8.44	8.80	8.00	9.40
CaO	55.20	55.11	55.43	58.50	62.23
SO_3	0.41	0.53	0.79	1.57	2.09
Ign. Loss	14.70	14.80	13.50	9.44	4.20
Physical Tests—					
Normal Const.	40%	37%	38%	36%	31%
Initial Set	2:20	1:55	1:40	1:40	1:50
Final Set	10:25	8:45	4:10	4:10	4:05
Specific Gr.	2.36	2.42	2.48	2.67	2.91
Fineness, No.—					
200-Mesh	99.5	100	99.5	100	99.3
325-Mesh	96	97	98.2	97	93.0
Tensile Strength 1:3 Sand, Lb. per Sq. In., at Age—					
24 Hours	57	63	110	222	315
3 Days	59	72	145	297	330
7 Days	84	158	242	447	432
28 Days	247	317	381	554	637
3 Months	370	487	502	601	655

degree in any one cement, it follows that there should be prepared recognized specifications for at least six cements, namely, high-early-strength cements, plastic cements, those of low heat of hardening, those having low volume changes, those offering resistance to moisture and aggressive solutions, and at least two of somewhat the nature of our present standard portland cements, one of these two being lower in lime and higher in silica than the other."

Recognizing the need for cements that could have a variety of uses, and at the same time taking into consideration the necessity of a simplified and economical process for the manufacture of such cements, the Cement Process Corporation, after a number of years of research activity along this line, finally arrived at a simplified process which, with very little change in procedure, is claimed to permit the production of cements exceeding in quality the

MILL TEST NO. 86

Caustic lime passed through hammermill and moist river sand discharged into common elevator, which in turn discharged into screw-type hydrator, at which point sufficient water was added to insure hydration and promote reactions. Hydrator in turn discharged into feed screw of tube mill, test period covering 10 hours. Moisture, temperature and fineness control exercised throughout test. Preliminary ground cement clinker fed to mill in varying amounts at latter stage of test.

Percentage of Cement in Product	*Finished Products as Discharged from Mill* 86-A 0.0%	86-B 29.1%	86-C 63.7%	86-D 95.5%
Chemical Analyses—				
SiO_2	27.80%	24.00%	22.00%	22.60%
R_2O_3	7.22	7.40	7.80	9.40
CaO	50.72	56.95	60.04	62.83
SO_3	.08	.85	1.71	2.51
Ign. Loss	13.42	10.40	8.44	2.38
Physical Tests—				
Normal Const.	38.3%	32%	31%	27%
Initial Set	4:25	1:30	1:10	1:15
Final Set	13:35	3:30	3:00	3:00
Specific Gr.	2.45	2.59	2.74	3.00
Fineness, No.—				
200-Mesh	98.3	98.0	99.0	100
325-Mesh	.....	91.0	94.0	97.5
Tensile Strength 1:3 Sand, Lb. per Sq. In., at Age—				
24 Hours	32	174	356	401
3 Days	37	233	372	452
7 Days	54	374	487	598
28 Days	268	531	575	625
3 Months	408	564	718	672

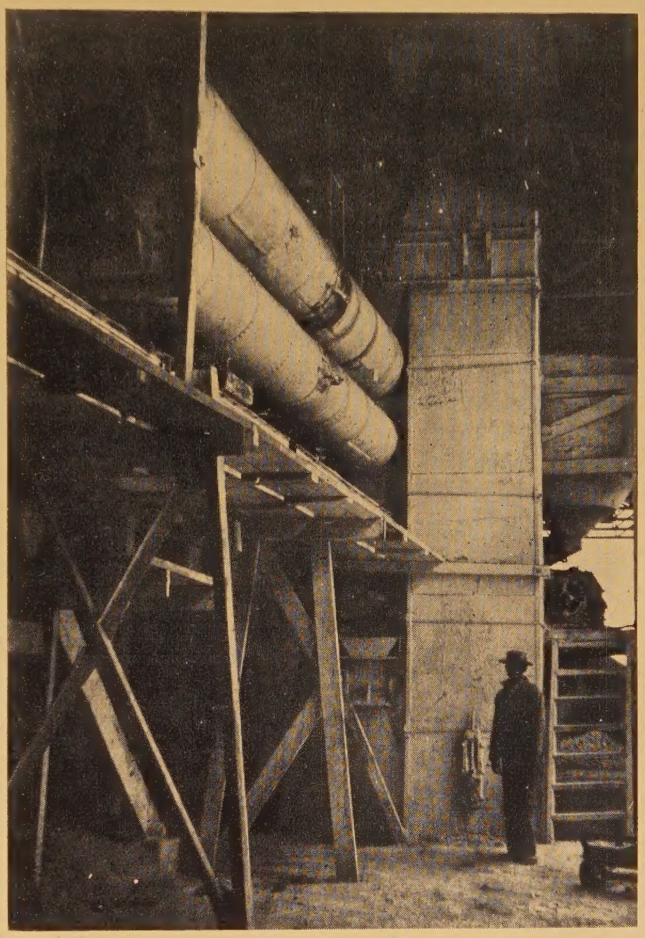
MILL TEST NO. 90

Hydrated lime and tripoli were fed by belt to a tube mill at which point sufficient water was added to insure the proper reactions between the lime and siliceous material. Temperature, moisture and fineness control were exercised throughout the test, which approximated 10 hours. At the latter stage of the test portland cement clinker previously ground to about No. 4 mesh was fed to the mill in varying amounts in connection with above mentioned lime/tripoli/water feed.

Percentage of Cement in Product	*Finished Products as Discharged from Mill* 90-A 0.0%	90-B 18.0%	90-C 43.6%	90-D 97.7%
Chemical Analyses—				
SiO_2	30.72%	25.04%	23.40%	22.00%
R_2O_3	9.52	8.64	9.20	9.40
CaO	41.40	49.70	57.74	62.82
SO_3	1.81	2.20	2.58	3.49
Ign. Loss	15.92	13.00	6.50	2.00
Physical Tests—				
Normal Const.	34%	30%	28%	25%
Initial Set	1:50	1:10	1:10	1:15
Final Set	6:30	3:05	3:00	3:00
Specific Grav.	2.47	2.62	2.87	2.98
Fineness, No.—				
200-Mesh	98.9	100	100	97.8
Tensile Strength 1:3 Sand, Lb. per Sq. In., at Age—				
24 Hours	92	279	304	306
3 Days	108	297	361	392
7 Days	171	359	440	465
28 Days	336	504	548	615
3 Months	457	562	579	644

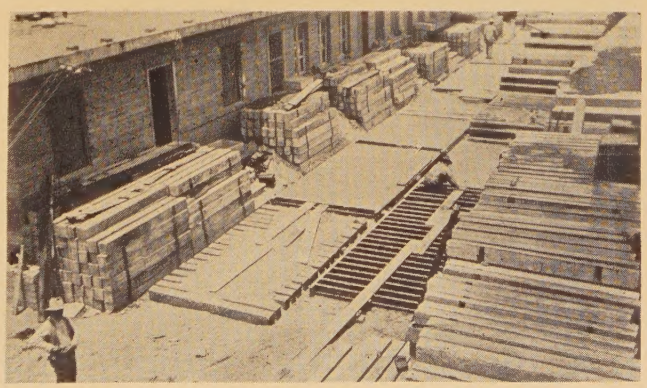
present high-strength cements, cements equal in quality to the present portland cements, and masonry cements which are not only adapted for use as an ordinary mortar, but which have the added advantage of use as a hard wall-plaster for both interior and exterior use and as a stuccoing material.

Roughly, the process consists in hydrating caustic lime in the presence of siliceous or argillaceous materials and grinding under controlled moisture and temperature conditions; or, hydrated lime with siliceous or argillaceous materials may be ground under controlled moisture and temperature conditions. The resulting products may be classified as masonry cements, or equal in quality to present portland cements, this depending upon the materials, their proportioning, and the control exercised in the manufacturing process. In certain cases the use of varying amounts of portland cement or clinker previous to the final grinding process, but following the hydration process, is found advisable to obtain the desired results.



Hydrator and allied equipment used to produce new cements

Any raw material that is adaptable for use in connection with the manufacture of portland cement can be used in the above process. Therefore, both pure and impure limestones, cement-rock and similar calcareous materials may be used in connection with clays, shales, slags, dia-



More than 3,000 reinforced concrete railroad ties made with new "Atoyac" cement

tomaceous earths, tripoli, sands and other siliceous and argillaceous materials.

The characteristics of cements of both high-strength and ordinary quality, together with masonry cements produced during the past year on a mill scale of operations, and under patent No. 1,912,883 as owned by the Cement Process Corporation, are shown in the mill tests here reported.

Additional Experiments; Plant Changes

Since obtaining the foregoing test results, several hundred additional mill tests have been made at the plant of the Landa Portland Cement Co., Puebla, Mexico, which company has acquired the Mexican rights to produce high-strength, ordinary and masonry cements under the patents held by the Cement Process Corporation.

All available types of calcareous, siliceous and argillaceous materials have been experimented with, as have the important control features embodied in the process.

One of the cement kilns has been converted into a lime kiln at the Landa plant, and the hydrator used in connection with the process was erected by the company's staff. Several new storage silos and a new packing plant have also been built, and on the first of June the Landa Cement Company placed on the Mexican market its new "Atoyac" cement as a competitor of its standard Landa portland cement.

Coming virtually at the time when P. H. Bates, in a paper presented before the A. S. T. M., advocates the production of six or seven different types of cement, this story of the launching of several such types is most timely. At the same session of the A. S. T. M., R. W. Carlson and G. E. Troxell described the effect of adding siliceous materials to portland cement.

Now, on a commercial scale, the ice has been broken. Our July (1932) editorial on "The Competition of the Thirties" packed a prophecy that may come true before the ultra-conservative element of the industry has been roused from its slumbers.—Editor.

Comparative Tests Show Differences

A comparative test upon a large scale has since been made whereby some 3,000 concrete ties were fabricated with the new "Atoyac" cement and several hundred concrete ties were made using Landa portland cement. Test data to date reveals the following advantages through the use of the new "Atoyac" product over the use of the standard cement.

(1) Greater plasticity and ease in placing concrete; (2) lower heat of hardening of concrete; (3) faster removal of forms from ties; (4) a cheaper concrete tie due to somewhat leaner mixes being possible; (5) a lighter weight and color tie.

On the same date (June 1, 1933) the Landa Cement Company placed on the market its new masonry cement "Producto Atoyac." A large series of tests whereby this new product was used as a mortar for bricklaying, as a rough and smooth hard wall plaster, and a stucco, has shown the product to be far superior to any masonry materials previously used for work of that kind in Mexico.

Supervision of the manufacture of both of the new products is taken care of by one man.

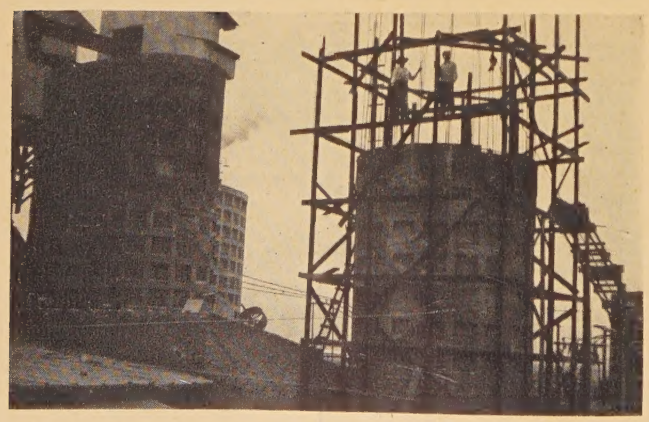
It is found that variations in the materials used, both the calcareous on the one hand and the siliceous and argillaceous on the other, together with variations in the moisture, temperature and fineness factors of the process, permit the manufacture of any particular type or quality of cement or masonry cement desired for any particular use. For this reason it is felt that the new process is a definite step toward the simplification of cement manufacture, in general at economies in both manufacture and use that were heretofore thought unbelievable.

The process makes possible the manufacture of new cements in any of the existing cement plants having available the usual classes of materials necessary for portland cement manufacture, and the expense incurred in preparing an existing plant for the production of these products constitutes a very small outlay.

At the same time, existing lime plants with the usual equipment, would require a very small outlay to place them on a cement producing basis.

It is felt that, in opening up a new field in this connection, the cement and lime industries can now operate hand in hand in the production and marketing of these new and improved cements.

It also opens up a new and only partially developed field for the plant and research chemist and points the way to the manufacture of cements, high-strength, ordinary and masonry of heretofore unthought-of quality, and at a great economy in production over existing methods.



Additional silo at Landa plant, being built with one of new special cements

Widespread Reopening of Plants Aids Thousands

Full crews were put to work at many of the numerous cement plants which reopened June 1.

Three plants of the Universal Atlas company, which had been closed for a month or more, resumed at that time. The Indiana mill re-employed between 300 and 400 men, the Duluth plant 225, and the Pittsburgh plant approximately 250 men. The Hannibal, Mo., plant will continue operating at the one-third capacity rate which has been in effect there since February 1.

Congressional Address Defends Price of Portland Cement

Continuous Badgering by Federal Government Shown—Uniform Price of Gasoline and Many Other Basic Industrial Products Accepted Without Concern

WITHIN recent weeks there has occurred a renewed discussion of cement prices, which appears to have had its inception in a request made by the Secretary of the Interior that the Federal Trade Commission investigate cement bids for Illinois highway work.

In some quarters these discussions have led to the criticism that present cement prices are unduly high. It is to this criticism that I wish to address myself; first, on the ground that I believe such criticism unjust and uncalled for, and second, because I have the honor to represent a district in eastern Pennsylvania in which cement is one of the chief articles of production.

In eastern Pennsylvania alone the cement industry represents a capital investment of more than $120,000,000. In normal times it produced more than 40,000,000 barrels of cement, employed about 10,000 wage earners, purchased annually more than $40,000,000 in materials, and paid out approximately $16,000,000 in salaries and wages.

There is no necessity for me to recite the situation of cement workers and manufacturers in eastern Pennsylvania at present, except to say that they have felt the depression as severely as any class in the country.

I am cognizant of the difficulties against which these companies have been struggling for several years, not only against the depression but because of a disastrous 2-year price war which brought selling prices to the lowest point in more than 16 years.

To make the conditions worse, the cement companies in eastern Pennsylvania, and, in fact, all companies on both coasts which ship into seaboard areas, have been harassed by foreign competition which has at times demoralized coastal markets, especially where the importer had the advantage of depreciated currencies.

The best answer to the criticism that the price of cement is unreasonable or even high enough to pay more than production costs lies in the fact that every cement company in the country which publishes figures showed heavy losses for the year 1932, the loss ranging up to $2,000,000 for a single company.

It is precisely because of a comparison of present prices with those quoted at the height of the price war that the cement industry is under criticism today. In Illinois, for example, the price bid this year, including freight, averages $1.62. This may seem high in comparison with the $0.94 paid last year, when the price war was at its height, but it is lower than the state paid for cement prior to the price war and lower in fact than the state paid for cement in any of the 14 years it has bought cement except for the years 1931 and 1932, which were price-war years.

Governor Horner, of Illinois, has published the following figures, which bear out this contention:

	Per bbl.		Per bbl.
1919	$2.04	1926	$2.15
1920	2.03	1927	2.20
1921	2.04	1928	2.00
1922	1.86	1929	1.98
1923	2.06	1930	1.78
1924	2.15	1931	1.29
1925	2.15	1932	.94
	1933 (bid price)		$1.62

* * * * * * * * * *

Average, 1919-32, including price-war years of 1931 and 1932	$1.90
Average, 1919-30, excluding price-war years	2.04
Price bid 1933	1.62

As to the reasonableness of present prices, I am reliably informed by cement manufacturers that present prices will not cover costs and that they will lose money at present levels.

The meaning of these losses is clear to us all. They mean continued dearth of taxes to the Government, continued loss of dividends and interest, continued unemployment, continued reductions in salaries and wages, and a continued postponement of prosperity.

Another point upon which the cement industry has sometimes come in for criticism is the fact that at certain times and places prices are uniform. Certain of my friends in the cement industry have consulted with me on this subject of uniform prices and they believe, and I believe, that the time has arrived to place on the public records an explanation of price uniformity in the cement industry, which that industry insists is not only justified but necessary in the conduct of its business.

The cement industry does not refer me to uniform price arguments in tobacco, in bread, in milk, in gasoline, or in many other basic industries, as a reason for its own selling methods, even though these are entirely pertinent. The cement industry, on the other hand, is ready, even insistent, on standing on its own feet and in proving that uniformity of prices promotes competition rather than stifles it.

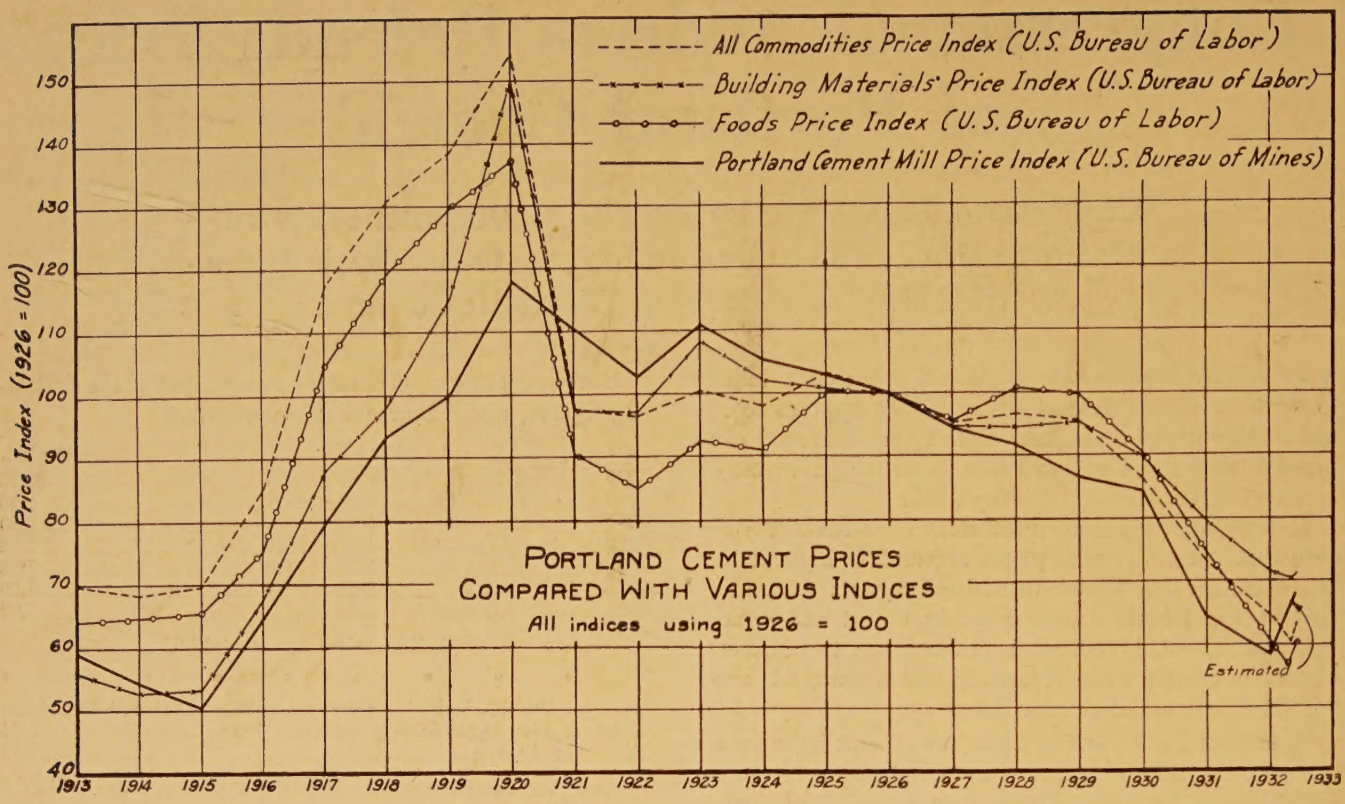
When this very question was before the courts an eminent authority, Dr. Thomas S. Adams, professor of political economy at Yale University, stated:

> There is for all practical purposes a unanimity of opinion among economists that with a standardized commodity and conditions of effective competition there is the strongest tendency to uniform prices.

Later in this same case, in which uniformity and collusion in the making of prices were charged against the cement industry, the Supreme Court, in its decision upholding the industry, decreed in part:

> It is conceded that there is a substantial uniformity of the price of cement. Variations of price of one manufacturer are usually

Speech of Hon. Francis E. Walter, of Pennsylvania, in the House of Representatives, Thursday, May 25, 1933.



THE TREND OF CEMENT PRICES

This diagram shows the trend of portland cement prices since 1913 compared with the prices of food, building materials, and *all* commodities. Figures used in plotting this chart were obtained from the United States Bureau of Labor, with the exception of those for cement, which were compiled by the United States Bureau of Mines. 1926 figures are used as the base (100).

As shown by this diagram, portland cement prices did not rise as high proportionately as prices of food, other building materials, and commodities in general in the peak price year of 1920. From 1915 to 1920, the cement price curve was below the level of the other indices. From 1921 to 1926, cement was slightly above. From 1926 to 1932, including the period of rapidly falling prices, the cement curve was consistently below the other indices.

It is apparent from this diagram that the average price of portland cement has fallen more rapidly than that of other goods, including food, other building materials, and commodities in general.

followed by variations throughout the trade. * * * The fact is that any changes in the quotations of dealers promptly become well known in the trade through reports of salesmen, agents, and dealers of various manufacturers. It appears to be undisputed that there were frequent changes in price, and uniformity has resulted not from maintaining the price at fixed levels but in the prompt meeting of changes in price by competing sellers.

The defendants (the cement industry) offered much evidence tending to show independence of judgment and action by large expenditures in competitive sales efforts and by variations in the volume of their production, shipments, earnings, and profits.

A great volume of testimony was also given by distinguished economists in support of the thesis that in the case of a standardized product sold wholesale to fully informed professional buyers uniformity of price will inevitably result from active free and unrestrained competition and the Government in its brief (against the industry) concedes that "undoubtedly the price of cement would approach uniformity in a normal market in the absence of all combinations between manufacturers."

Since that decision of the Supreme Court was rendered there has developed within the cement industry a distinct tendency to lean backward in its dealings with the public. For years it has adopted the precept "let the seller beware" lest it again lay itself open to the charges of which it was held guiltless by the courts. In other words, its policy has been to avoid, at all costs, conflict with the Federal, state, and local governments and the public; yet it is still faced with the necessity of adhering to uniform prices because of inflexible economic laws.

Cement is a highly standardized commodity, both as to quality and process of manufacture. Price is the determining factor. Most cement is sold to dealers and contractors who are necessarily professional buyers. Manufacturers' prices come into comparison with each other on almost every construction job of importance. This makes for keen and fully informed competition, and the delivered prices are necessarily uniform on any particular job or offering.

Such uniformity, however, is in the price quoted to the consumer at the time and not in the net return received by the manufacturers. Neither prices to consumers nor net mill returns have been uniform at any one place over a period of years or in several places at the same time.

Cement is a cheap, heavy commodity; and because of the high freight rate the delivered price is usually the mill price of the plant nearest the job, plus the cost of transportation from mill to job. A simple illustration of how prices are arrived at is as follows:

A, B and C are cement makers seeking business in Washington. A has a 30-cent freight rate, B a 35-cent rate, and C a 40-cent rate. This gives A a 5-cent advantage over B and a 10-cent advantage over C. A figures he can sell at $1.50 a barrel at his mill, so adds the 30 cents freight and quotes cement at $1.80 a barrel Washington. Then if B and C wish to do business in Washington B must absorb a 5 cents additional freight rate and C a 10-cent rate; that is, at his mill B will receive 5 cents less than A, and C will receive 10 cents less. If their costs are the same as A's their profits will necessarily be lower. Unless B and C can

(*Continued on Page* 35)

EDITORIAL

There Is No All-Purpose Cement

THE leading article in this issue tells a story that has long been awaited and expected by the progressive element of the cement industry. One of the best managed and best equipped cement companies on the North American continent launches two new special cements that are designed for special uses. One is a high-strength cement, of somewhat better quality than standard portland cement, and the other is a masonry cement adaptable for use as a mortar for laying brickwork, and for use in wall plaster and stucco.

Compared with standard portland cement the first of these new cements has greater plasticity, lower heat generation during hardening, more rapid hardening, lighter weight and lighter color.

In European countries, iron-portlands and slag-portlands have been on the market for years. They were developed for special purposes and they are being used for those purposes.

American cement chemists have long been playing around with the idea of grinding volcanic rock or blast-furnace slag with standard portland cement clinker, in order to produce a mixture that would convert the soluble lime liberated during the hardening process, into an insoluble lime silicate. Always the purpose has been to produce a cement which in turn would produce a concrete capable of resisting sea water, alkali water, fresh water and other natural destructive elements, or produce lower volume change, or greater plasticity, or perform some other desirable function. Admixture manufacturers have attempted to accomplish similar purposes through the addition of materials at the mixer, with varying degrees of success.

And now, almost simultaneously with the announcement that the Landa organization has started the marketing of two new special cements, P. H. Bates presents a paper before the American Society for Testing Materials in which he scorns the idea that there can be such a thing as one "all-purpose" cement. In language that cannot be misunderstood he tells cement manufacturers that present-day engineers have learned enough about cement to know that any one type will not meet all requirements. He advocates no less than six or seven special cements, including high-early-strength cements, plastic cements, those of low heat generation in hardening, those having low volume changes, those offering resistance to sea water and other aggressive solutions, and at least two of a character somewhat similar to our present standard portland cement, one being lower in lime and higher in silica than the other.

Cements of the six or seven types suggested by Mr. Bates are coming as a part of the natural order of progress. Opposition may delay them, but it cannot stop them. Progressive manufacturers will fall in line with this development.

Badgering of Cement Industry Continues

AN Associated Press dispatch from Washington under date of June 10 informs the country that the Federal Trade Commission's report to the Senate finds that associations of cement dealers "tend to control terms of sale and methods of distribution by manufacturers in such manner as may constitute a violation of the anti-trust laws."

The report admits that no company manufacturing or selling portland cement possesses monopolistic control, but the opinion is expressed that the multiple basing point price system has a tendency to lessen price competition. A plan is suggested with a view toward restoring such competition.

The basing point system is nothing new in American industry, and the same is true of associations of dealers. Only manufacturers and dealers in the cement industry, however, draw attacks from the national government.

On the positive side of the argument it may be said that the trade commission's report is perfectly asinine, in view of the decision of the United States Supreme Court in the Appalachian coal case, handed down on March 13 of this year and discussed in an editorial in our April issue. That decision specifically opens the way for co-operative marketing agencies where such agencies do not control a large enough part of the market to constitute monopolistic control. Under this court decision sectional groups of cement companies could lawfully do the very things with which the trade commission finds fault.

In addition, Title I of the National Industrial Recovery Act, all but passed when the Federal Trade Commission report was handed in, will permit freedom of action quite at variance with the so-called anti-trust laws. For all practical purposes those antiquated anti-trust laws are suspended — indefinitely, let us hope.

In view of the Appalachian coal decision and the new industrial control bill, the Federal Trade Commission's report to the Senate has about as much value as a report on who won the war. It is merely another link in that chain of badgering of the cement industry by the federal government, discussed by Hon. Francis E. Walter in a congressional address on May 25, reprinted in this issue.

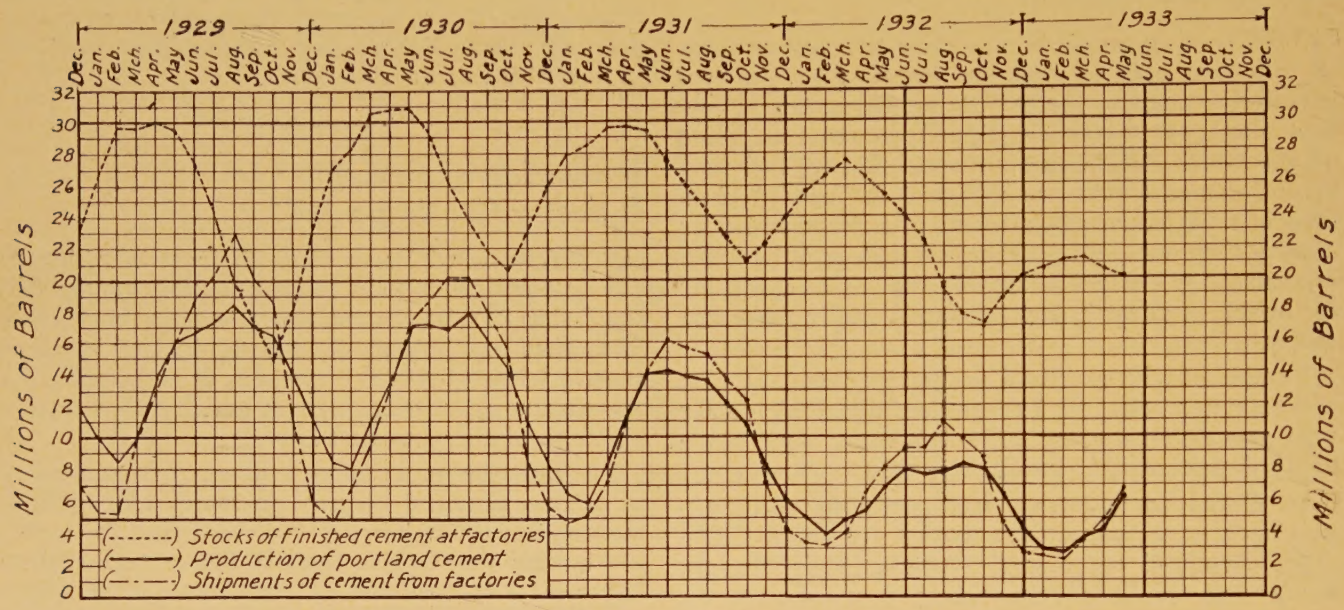
Cement Statistics for May

Relation of Production to Capacity (Per Cent)

	The Month	Twelve Months
May, 1933	27.4	26.0
May, 1932	30.2	38.9
April, 1933	18.9	26.2
March, 1933	16.1	26.7
February, 1933	13.4	27.1

Production, Shipments and Stocks of Finished Portland Cement (Barrels)

	1932	1933
Production, May	6,913,000	6,266,000
Shipments, May	8,020,000	6,748,000
Stocks at end of month	25,394,000	20,060,000
Production for year to date	26,235,000	19,868,000
Shipments for year to date	25,040,000	19,987,000



Marquette Wins 2,000,000-Bbl. Illinois Contract

Ending a cement price controversy which had tied up state highway construction since last April, Gov. Horner announced June 22 that a contract had been negotiated with the Marquette Cement Company for the purchase of 2,000,000 bbl. of cement from its plant at Oglesby, Ill. The purchase is expected to provide for resumption of building by fifty-four road construction companies and return 30,000 men to work.

The purchase was made under authority of a newly enacted law enabling the state to purchase cement and other supplies in the open market if a reasonable price is unobtainable by advertising for bids.

The open market price secured from the Marquette company averages 50 cents a barrel higher than was paid by the state for highway construction last year, but is 18 cents a barrel less than the identical bids for $1.62 a barrel, submitted by sixteen companies and three times rejected by the governor last April.

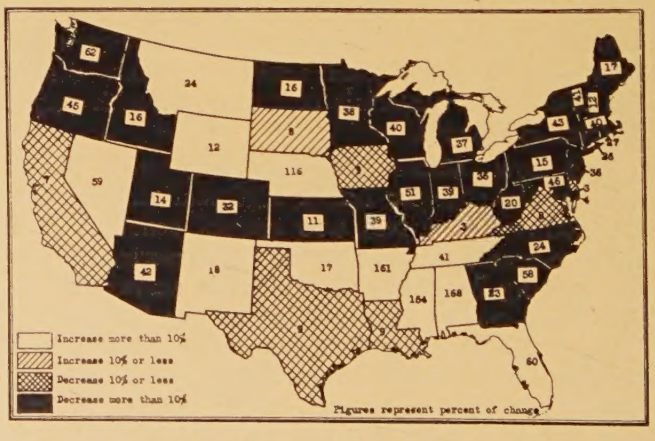
The state had originally asked bids on 3,300,000 bbl. for this year. The saving effected by the open market purchase, as compared with the bids of the cement combine, amounts to $360,000.

Model Code of Fair Competition

The National Association of Manufacturers has issued a preliminary draft of "A Model Code for Self-Governing Industries" for use in connection with the National Industrial Recovery Act signed by the President on June 16. Copies can be obtained free on request, by addressing the National Association of Manufacturers either at 11 West 42nd Street, New York, or Union Trust Building, Washington, D. C.

The author of the model code is Dr. A. P. Haake, managing director of the National Association of Furniture Manufacturers.

May Cement Map Shows Improvement



Shipments of portland cement in May, 1933, make a better comparison with May, 1932, than the corresponding comparison between April shipments in the two years.

The accompanying map, issued by the U. S. Bureau of Mines, comparing May shipments with the same month last year, contains 29 black states, whereas the April map had 32. The May map, likewise, contains 11 white states, compared with 10 in April.

Industry Innocent of Monopoly, Commission Asserts

The Federal Trade Commission in a report made to the Senate on June 10 stated it had found associations of cement dealers "tend to control terms of sale and methods of distribution by manufacturers in such manner as may constitute a violation of the Anti-Trust Laws."

No company, however, was making or selling portland cement with a sufficient part of the business to form a monopoly. The multiple basing point pricing system was found by the commission to have a "tendency to lessen price competition." It suggested a plan to restore this competition.

Foreign shipments to the United States were decreased everywhere except New York by the imposition of duty on imports, the report said. Foreign cement prices in New York, because of depreciated currency abroad last year, were lower than those charged by domestic manufacturers.

A summary of the principal facts covered in the report, including the commission's conclusions, was issued in mimeographed form under date of June 9 by the Federal Trade Commission. Copies can doubtless be obtained by addressing the commission.

Congressional Address Defends Cement Price

(*Continued from Page* 32)

make the mill price sacrifices required by the market at Washington they must permit A to monopolize that market.

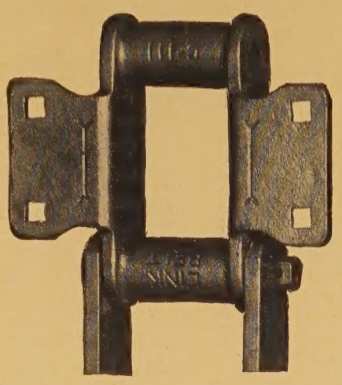
The cement industry asks only a chance to right itself in a rightful way. For years it has been buffeted; in 1926 the Harding Department of Justice haled the industry before the courts, which culminated in a victory for its methods. Almost before it could readjust itself came the tariff bill, and again for 18 months the industry was uncertain as to whether Congress would decrease the steady flow of imports which were demoralizing its principal centers.

On the day the Hawley-Smoot bill was signed, giving cement a duty, the Senate passed a resolution citing the cement industry before the Tariff Commission to justify the duty which had only that day been granted it. In this case the Commission, after months of study, decided that the duty fixed by Congress was a just one.

In the meantime the Federal Trade Commission of its own volition had started an investigation on base prices in the cement industry—which comprised hundreds of pages with charts and graphs—and also went into uniform prices and kindred matters, and finally was printed.

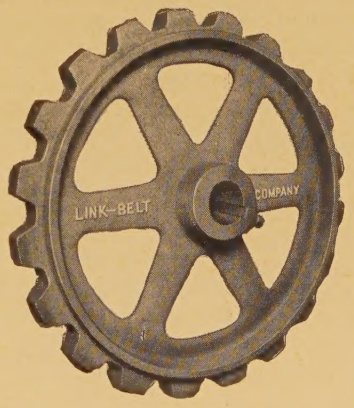
But before the report was off the press, another Senate resolution was adopted by the Senate calling upon the Federal Trade Commission to investigate all phases of the cement industry, and this investigation is now being conducted. [This report was completed and submitted to the Senate on June 9.—Ed.] All these proceedings are a disturbance of the normal functions with which an industry naturally concerns itself; and the cement industry for one is ready to cry "enough" to Federal persecution and to ask for a measure of governmental assistance, or at least to be permitted to conduct its business without further badgering.

An Unbeatable Combination



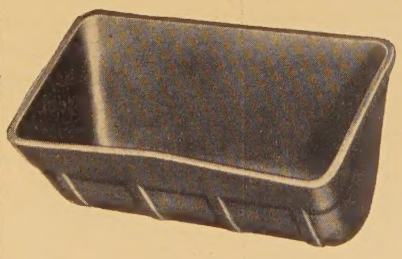
CHAINS

Chains of steel, malleable iron or Promal, that stand up under the grueling conditions of cement mill operation. For conveying or power transmission, Link-Belt makes the correct size and type to fit your needs. Chains of Promal (the tried and proved, stronger, longer-wearing metal) should last twice as long as chains of malleable iron.



WHEELS

20,000 perfectly fitting Link-Belt sprockets, designed correctly to fit chains of standard pitch, are stocked at Philadelphia, Chicago, Detroit, San Francisco and Toronto, ready for immediate shipment. Made of gray iron or ≻ FLINT-RIM ≺ metal. We also make sprockets to order to meet any special requirements. Send for Stock List No. 1267.



BUCKETS

The Link-Belt "AAP" Promal Bucket embodies exclusive features and improvements in design which make it ideally suited for heavy-duty elevators. It is correctly reinforced at vital points, and furnished in all standard sizes.

Send for particulars.

4749

LINK-BELT COMPANY

Leading Manufacturers of Equipment
for Handling Materials Mechanically and Transmitting Power Positively

Indianapolis, Ewart Plant, 220 S. Belmont Ave.; Dodge Plant, 519 N. Holmes Ave.
Chicago Plant, 300 W. Pershing Rd.; Caldwell-Moore Plant, 2410 W. 18th St.
Philadelphia Plant, 2045 W. Hunting Park Ave. San Francisco Plant, 400 Paul Ave.

Offices in All Principal Cities
In Canada: Link-Belt Limited—Toronto Works; Montreal; Vancouver

LINK-BELT

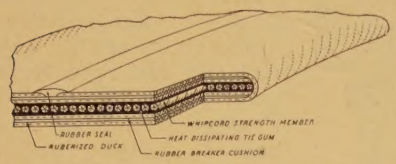
See our exhibit at A Century of Progress, Chicago

MILL EQUIPMENT

All-Elastic Stretch Feature of New Whipcord Belt

A new belt featuring an endless-wound whipcord construction that has no inelastic stretch is being offered by the Manhattan Rubber Mfg. division of Raybestos-Manhattan, Inc., Passaic, New Jersey.

This belt is to be known as the Condor Whipcord transmission belt and was developed after many years of research for high speed, high tension drives which almost invariably require an endless belt.



The Condor Whipcord belt is the continuous-endless-wound type. Its single layer cord section is the equivalent of six duck plies in strength and is many times more flexible, it is claimed.

●

Combination Oil-and-Gas Burners by B & W

The Babcock & Wilcox Co., New York City, has announced a combination oil-and-gas burner in which are combined the features of the B & W mechanical atomizing oil burner with an efficient method of burning gas.

The gas is broken up into small streams and is discharged at right angles into a venturi throat through which the air for combustion passes, insuring complete mixing and rapid combustion. The burner is made in heat-liberation capacities up to 70,000,000 B.t.u. per hour per burner using natural gas.

●

A New Sound-Isolating Base for Motors

A new motor base with scientifically designed sound-isolating features has been developed by the General Electric Co., Schenectady, N. Y. Floating members are suspended on specially developed isolating material, so enclosed and mounted that long life and freedom from damage are said to result. The motor is mounted as on a standard sliding base, and belt tension and motor alignment are maintained in the ordinary manner.

In addition to its sound-isolating qualities, the new base is said to offer the following advantages for facilitating installation and contributing to successful operation:

1. Adjusting screw moves motor for belt adjustment.
2. Bases are installed as a unit. No more attention to adjustment is required than is necessary for standard sliding bases.
3. The stiffness of the sound-isolating material is sufficient to maintain motor alignment for any reasonable belt tension.
4. Guide washers in machined grooves are used with the belt-adjusting feature to maintain motor alignment.

●

The Trayco Barrel Packer and Its Performance

A Barrel Packer, using the Trayco vibrating principle, is a new application recently brought out by the Traylor Vibrator Co. of Denver, Colo.

Packing performances in tests on gypsum, lime, sand, and limestone were found to vary greatly with the characteristics of the material. Sand may be packed to maximum density in one minute with a 16 per cent increase in density; it requires about five minutes to reach the maximum density of gypsum or lime and the increase in density is 75 per cent, one-third of which will occur in the first five seconds.

Field Activities

New Audubon Organization

The entire business and assets of the *Audubon Wire Cloth Co., Inc.*, wire cloth and wire products manufacturers of Audubon, N. J., were acquired by the *Manganese Steel Forge Co.*, of Philadelphia, Pa., on May 1, 1933.

The business will be conducted by the *Audubon Wire Cloth Corp.*, a new organization and wholly owned subsidiary of the Manganese Steel Forge Co. The officers of the new corporation are:

L. W. Jones, president; *L. W. Jones, Jr.*, vice-president and treasurer, and *A. W. Zackey*, secretary.

●

Temporary Detroit Manager

L. E. Jeanneret, special representative of the *Babcock & Wilcox Tube Company*, is acting temporarily as district sales manager of the company's Detroit territory, replacing J. E. Polhemus, former manager.

●

A view of the Link-Belt Company exhibit at A Century of Progress referred to briefly in these columns in the June issue of* Concrete *will be found under "Manufacturers News" in the Construction Section of this issue.

Industrial Literature

Combination Linestarters

A new descriptive leaflet on combination linestarters for squirrel cage and wound rotor induction motors has been published by the Westinghouse Electric and Manufacturing Co. Mounted as a complete, compact unit this line of remote controlled, non-reversing across-the-line type magnetic starters and disconnect switches with or without fuse mountings is described in this leaflet. For use on machine tools, pumps, fans and other applications where remote control is desired.

Copies of the publication may be obtained from the nearest district office or direct from the advertising department, East Pittsburgh, Pa.

●

Welding in Maintenance

Oxwelding for General Maintenance, a 16-page, illustrated, 3½ by 11 in. booklet has been published by the *Linde Air Products Co.*, New York City.

This booklet describes the use of the oxy-acetylene process of welding and cutting in reclamation of broken and worn machine parts, alteration, fabrication and installation of equipment. Among the various plant equipment covered are piping, tanks and containers, machine elements, engine and pump parts, frames and conveying equipment. Repair of worn parts by bronze-surfacing and hard-facing is given special consideration. Among the many illustrations is a chart giving thirteen simple tests for identifying the more common metals.

●

Self-Oiling Bearing

An automatic oiling bearing that is said to have proven successful on cement mill lineshafts is described and illustrated on page 15-A of *Catalog 29-A*, published by the *Hill Clutch Machine & Foundry Co.*, Cleveland.

Cleveland Type Oil Film bearings are not affected by dusty conditions and instances of steady operation for several years without any attention except replenishing of oil are said to be numerous.

●

Reducers and Gears

Bulletin 11, issued recently by the *D. O. James Mfg. Co.*, Chicago, is descriptive of spiral bevel gear reducers and spiral bevel gears. Complete information as to sizes, dimensions, horsepower rating and prices is given.